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DR 1093  
NOVEMBER 1979  
AD

LEVEL

METEOROLOGICAL DATA REPORT

19701A GSRS  
Missile No. 211  
Round No. B-57  
19 November 1979

by

White Sands Meteorological Team

DTIC  
SELECTED  
S APR 2 1980  
C

ATMOSPHERIC SCIENCES LABORATORY  
WHITE SANDS MISSILE RANGE, NEW MEXICO

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of the 19701A GSRS, Missile Number 211, Round Number B-57 are presented in tabular form.		

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## CONTENTS

INTRODUCTION -----	1
DISCUSSION -----	1
LAUNCH AREA MAP -----	2
GENERAL AREA MAP -----	3
TABLES:	
1. Surface Observation taken at 1100 MST at LC-33 -----	4
2. Anemometer-Measured Wind Speed and Direction, LC-33 Fixed Pole, taken at 1100 MST -----	5
3. Anemometer-Measured Wind Speed and Direction, Tower Levels 1, 2, 3 and 4, taken at 1100 MST -----	5
4. LC-33 Pilot-Balloon-Measured Wind Data at 1050 MST -----	6
5. LC-33 Pilot-Balloon-Measured Wind Data at 1100 MST -----	7
6. Nick Site Pilot-Balloon-Measured Wind Data at 1048 MST -----	8
7. Nick Site Pilot-Balloon-Measured Wind Data at 1101 MST -----	9
8. WSD Significant Level Data at 1015 MST -----	10
9. WSD Upper Air Data at 1015 MST -----	11
10. WSD Mandatory Levels at 1015 MST -----	15
11. SMR Significant Level Data at 1145 MST -----	16
12. SMR Upper Air Data at 1145 MST -----	17
13. SMR Mandatory Level Data at 1145 MST -----	21

## INTRODUCTION

19701A GSRS, Missile Number 211, Round Number B-57, was launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1100 MST on 19 November 1979. The scheduled launch time was 1100 MST.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), Wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from RAPTS T-9 pibal observation at:

### SITE AND ALTITUDE

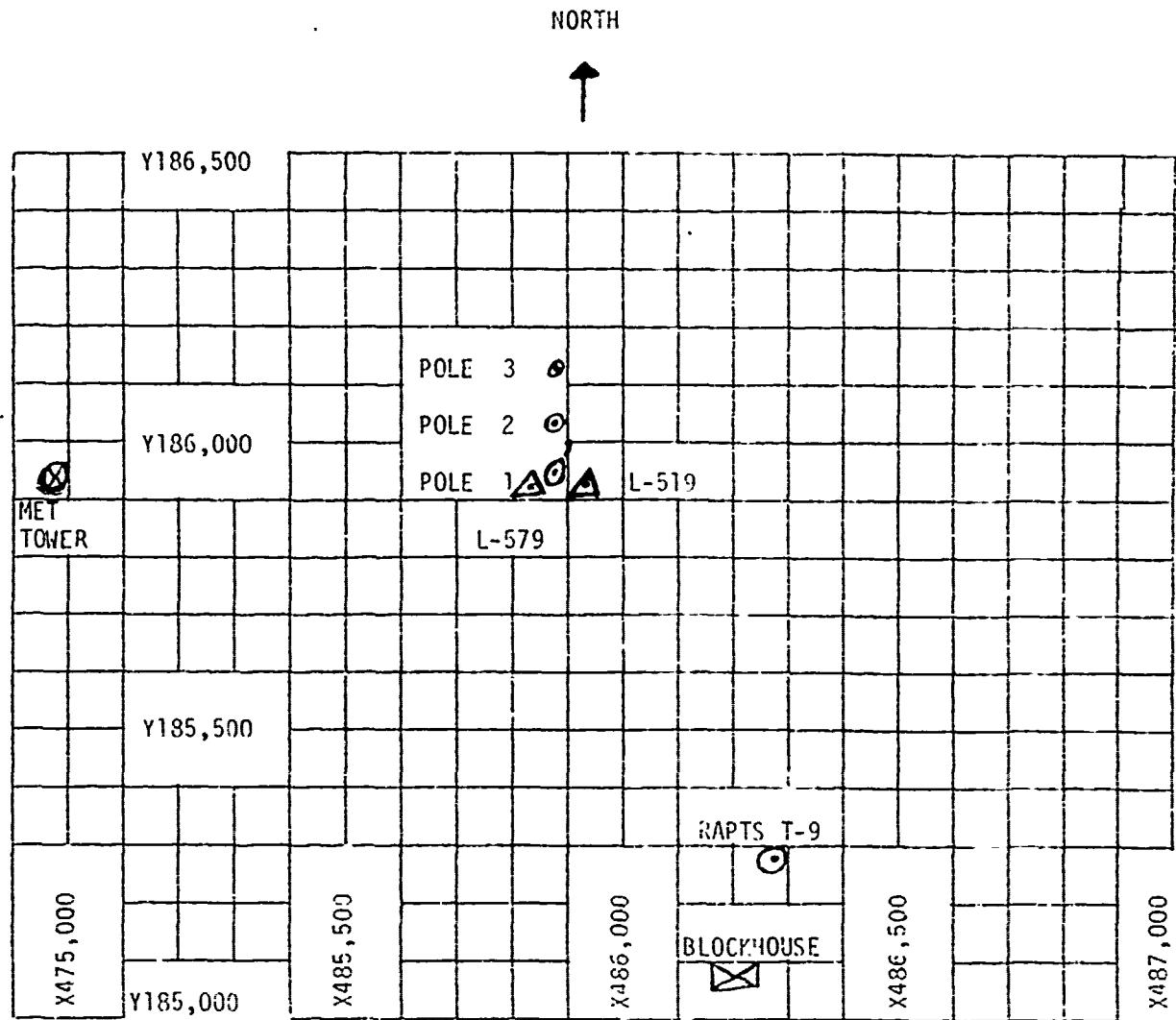
LC-33	2 km
Nick	2 km

(2) Air structure data (rawinsonde) were collected at the following Met Sites. Data were collected from surface to 83,000 feet in 500-feet increments.

### SITE AND TIME

SMR 1145 MST
WSD 1015 MST

Acquisition for	• Mail	• DAS TAB	By telephone	By facsimile	By e-mail	By telephone or e-mail	By special
NTIS							23
Dist							9



1. MET TOWER - 4 Bendix Model T-20 Anemometers at 12 ft, 62 ft, 102 ft, and 202 ft with E/A recorders.
2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders.
  - (a) Pole #1 - 38.7 ft.
  - (b) Pole #2 - 53.0 ft.
  - (c) Pole #3 - 83.6 ft.
3. RAPTS T-9 Radar Automatic Pilot-Balloon Tracking System T-9 Radar.

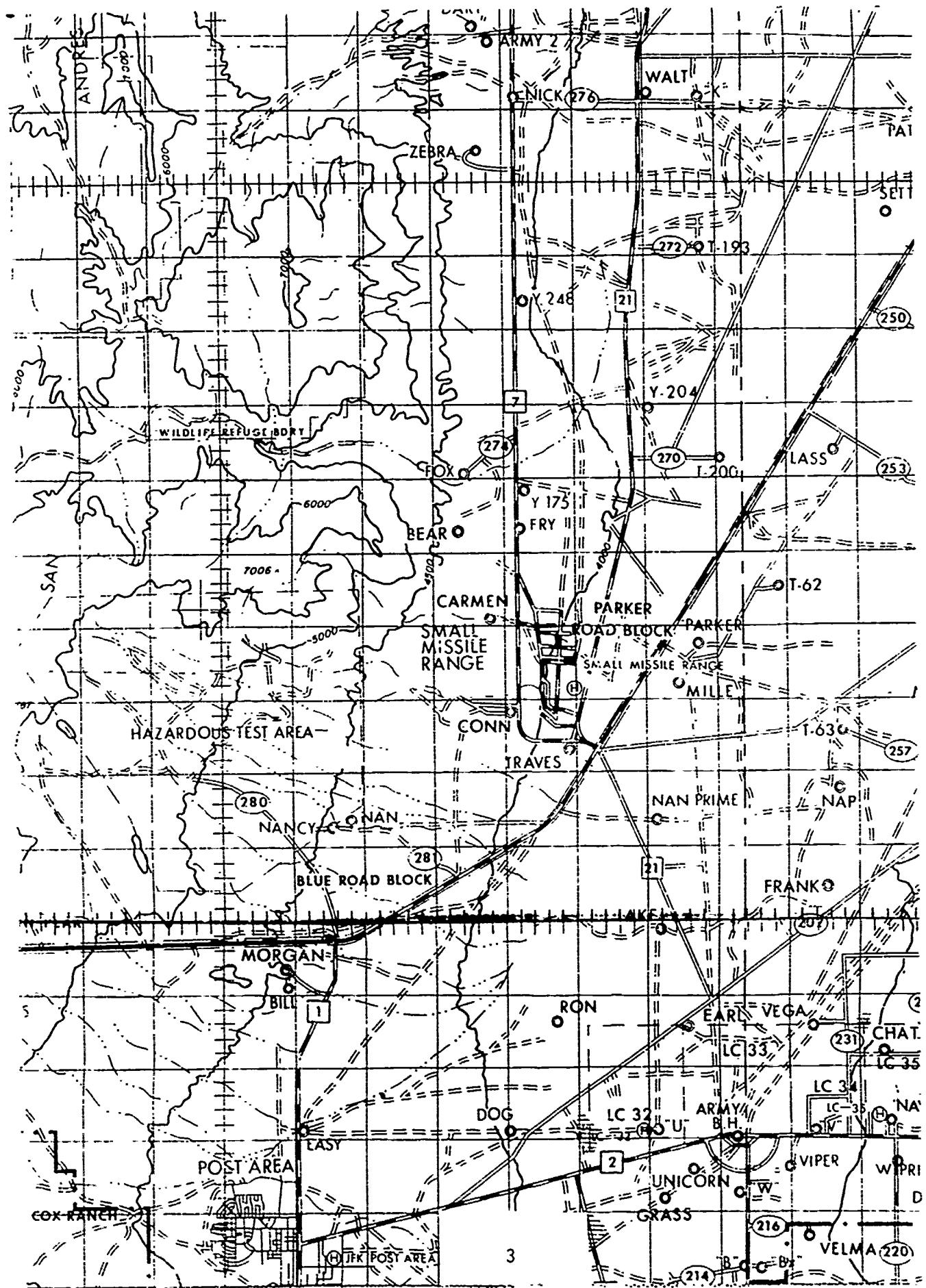


TABLE 1. Surface Observations taken at 1100 MST,  
19 November 1979, at LC-33, 19701A GSRS,  
Missile Number 211, Round Number B-57.

ELEVATION	3977.30	FT/MSL
PRESSURE	877.5	MBS
TEMPERATURE	19.5	°C
RELATIVE HUMIDITY	36	%
DEW POINT	4.1	°C
DENSITY	1044.78	GM/M <sup>3</sup>
WIND SPEED	15	KTS
WIND DIRECTION	142	DEGREES
CLOUD COVER	4	Cu

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1			POLE #2			POLE #3		
X485,874.29			X485,874.93			X485,877.29		
Y185,958.90			Y186,012.00			Y186,116.06		
H4018.74			H4033.57			H4063.92		
38.7 ft. AGL			53.0 ft. AGL			83.6 ft. AGL		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	133	10	-30	158	09	-30	143	15
-20	137	17	-20	135	10	-20	153	15
-10	141	16	-10	151	11	-10	147	15
0.0	142	15	0.0	150	10	0.0	144	14
+10	135	16	+10	138	11	+10	146	17

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #2, 62 FEET X484,982.64, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	136	12	-30	156	15
-20	125	10	-20	154	14
-10	144	08	-10	151	13
0.0	143	11	0.0	163	16
+10	126	10	+10	152	16

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3983.00 (base)			LEVEL #4, 202 FEET X484,982, Y185,057.73, H3983.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
-30	155	13	-30	144	14
-20	152	16	-20	148	14
-10	150	13	-10	144	15
0.0	160	14	0.0	135	14
+10	150	16	+10	148	18

PILOT BALLOON MEASURED WIND DATA

TABLE 4

RELEASED FROM LC-33

DATE 19 November 1979

TIME 1050 MST

## TRACKER

COORDINATES (WSTM)    X= 486,037.24    Y= 182,350.16    H= 3977.30

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH

HEIGHTS ARE METERS AGL xx OR FEET AGL xx.

PILOT BALLOON MEASURED WIND DATA

TABLE 5

RELEASED FROM LC-33

DATE 19 November 1979

TIME 1100 MST

## TRACKER

### COORDINATES (WSTM)

$$X = \underline{486,037.24} \quad Y = 1$$

$$H = \underline{3977.30}$$

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH

HEIGHTS ARE METERS AGL XX OR FEET AGL

PILOT BALLOON MEASURED WIND DATA

TABLE 6

RELEASED FROM Nick Site

DATE 19 November 1979

TIME 1048 MST

RELEASE POINT COORDINATES (WSTM) X= 470,734.56 Y= 255,775.64 H= 4126.57

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH

HEIGHTS ARE METERS AGL XX OR FEET AGL XX.

PILOT BALLOON MEASURED WIND DATA

TABLE 7

RELEASED FROM Nick Site DATE 19 November 1979 TIME 1100 MST

DATE 19 November 1979

TIME 1100 MST

RELEASE POINT COORDINATES (WSTM) X= 470,734.56 Y= 255,775.64 H= 4126.57

NOTE: WIND DIRECTIONS ARE REFERENCED TO TRUE NORTH

HEIGHTS ARE METERS AGL XX OR FEET AGL XX

STATION ALTITUDE 3989.00 FEET MSL  
10 NOV. 79 2015 HRS VST  
ASCENSION NO. 400

SIGNIFICANT LEVEL DATA  
32300204d6  
WHITE SANDS  
TABLE 8

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE AIR DRYPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
680.0	3369.0	18.9	40.3
667.2	4399.1	15.0	36.0
552.0	4954.5	15.6	39.0
770.4	7645.8	7.4	1.2
745.1	8546.3	5.0	1.9
720.2	9455.7	5.0	1.5
790.6	10212.0	2.6	2.9
681.6	10915.7	-0.5	-4.9
672.0	11269.0	-1.3	-0.9
655.4	12927.5	-0	-21.4
644.9	12334.5	-0.5	-22.4
635.0	14256.9	-14.0	-25.0
525.2	17661.8	-11.7	-29.3
508.0	18892.5	-15.1	-28.0
472.0	20319.9	-17.4	-34.4
436.6	22225.2	-22.0	-37.4
465.3	24327.3	-25.1	-39.1
371.3	26067.4	-30.0	-43.2
341.4	23042.5	-32.9	-46.5
335.6	26435.7	-33.7	-49.2
392.0	30995.9	-32.6	19.0
250.0	35026.3	-49.0	
215.2	33215.5	-55.5	
202.4	39516.4	-51.7	
230.0	39771.2	-51.9	
194.0	40422.7	-51.2	
162.5	44121.1	-56.1	
150.0	45815.2	-59.7	
135.8	48144.0	-64.5	
123.6	49733.5	-65.7	
210.2	52036.3	-66.0	
160.0	53267.7	-66.6	
78.5	58709.1	-63.9	
75.5	59582.0	-65.2	
70.0	61196.9	-61.0	
58.2	64749.9	-65.2	
52.0	68043.1	-66.1	
	52.6	-59.0	
	32.6	76764.6	

STATION ALTITUDE 3689.00 FEET MSL  
19 NOV. 73 1015 HRS MST  
ASCENSICL NO. 480

UPPER AIR DATA  
3230020460  
WHITE SANDS

TABLE 9

GEODETIC COORDINATES  
32°46.043 LAT DEG  
106.57033 LON DEG

GEODETIC ALTITUDE ASL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GY/CUBIC METER	SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
3689.0	860.9	10.9	4.3	39.0	1045.9	667.0	150.0	9.9	1.000270
4600.0	879.7	16.6	4.2	37.9	1045.9	666.8			1.000270
4500.0	864.1	14.7	4.1	36.5	1042.7	661.9			1.000260
5000.0	843.5	15.5	7.0	39.4	1026.5	660.5			1.000257
5500.0	835.2	12.3	5.5	44.3	1013.8	659.2			1.000255
6000.0	818.1	11.2	9.9	42.1	979.3	657.9			1.000253
6500.0	805.3	10.0	1.2	55.9	985.1	656.6			1.000251
7000.0	785.8	8.9	1.3	56.6	971.2	655.3			20.0
7500.0	774.5	7.7	1.3	63.6	957.4	654.9	214.4	21.5	1.000248
8000.0	760.5	6.5	1.2	60.9	914.2	652.5	217.1	22.8	1.000246
8500.0	746.4	5.1	1.0	74.5	931.3	651.0	219.4	23.9	1.000243
9000.0	732.6	4.0	1.3	77.0	917.6	649.6	221.1	24.2	1.000240
9500.0	719.0	2.9	1.4	73.6	904.5	648.3	221.9	22.8	1.000231
10000.0	705.6	2.0	2.1	74.0	870.9	647.1	222.6	23.3	1.000223
10500.0	692.4	1.8	3.7	71.6	678.2	645.7	223.0	24.5	1.000219
11000.0	679.4	1.5	5.7	66.7	855.5	644.2	222.3	27.4	1.000213
11500.0	656.6	1.2	11.5	42.3	649.6	644.1	221.7	30.5	1.000202
12000.0	654.1	0.0	20.7	19.3	633.7	644.1	219.1	32.7	1.000192
12500.0	641.8	0.2	22.6	16.0	617.3	644.3	216.2	34.7	1.000187
13000.0	629.5	-1.0	23.6	16.0	385.4	642.9	214.3	36.1	1.000184
13500.0	617.7	-2.2	24.3	15.0	783.7	641.5	213.2	36.8	1.000181
14000.0	605.0	-3.4	25.5	16.0	782.1	640.0	212.1	37.5	1.000178
14500.0	594.4	-4.5	26.3	15.4	770.5	638.0	214.2	37.5	1.000175
15000.0	582.9	-5.7	26.7	17.1	750.8	637.3	216.4	37.7	1.000173
15500.0	571.6	-6.6	27.2	17.6	747.3	635.9	218.9	39.0	1.000170
16000.0	560.5	-7.9	27.7	16.6	735.9	634.5	221.5	40.6	1.000167
16500.0	549.6	-9.1	26.2	19.3	726.8	633.2	224.4	42.8	1.000165
17000.0	539.0	-10.2	26.3	20.9	713.6	631.9	224.9	43.1	1.000162
17500.0	528.5	-11.5	26.4	20.6	703.0	630.5	225.7	42.7	1.000160
18000.0	518.2	-12.5	26.9	24.0	692.6	628.9	220.1	43.0	1.000157
18500.0	507.9	-14.0	26.5	26.5	682.5	627.3	218.0	42.7	1.000155
19000.0	497.8	-15.5	26.4	31.2	672.2	625.8	216.4	42.3	1.000153
19500.0	487.9	-16.0	30.4	27.3	660.6	624.9	219.1	42.2	1.000150
20000.0	479.1	-16.7	32.6	23.5	649.2	624.9	222.1	42.3	1.000147
20500.0	469.5	-17.6	34.4	24.2	636.4	622.9	224.6	43.1	1.000144
21000.0	459.0	-18.6	35.3	21.7	623.7	621.3	227.0	44.0	1.000142
21500.0	449.8	-20.1	36.2	22.2	619.1	619.8	228.7	43.2	1.000140
22000.0	440.6	-21.4	37.0	22.6	609.7	616.2	230.4	42.4	1.000137
22500.0	431.6	-22.5	36.9	25.5	599.9	616.8	231.3	42.1	1.000135
23000.0	422.7	-23.5	36.1	36.0	589.6	615.6	232.1	41.8	1.000133

XX WIND DATA INVALID DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.

STATION ALTITUDE 3939.00 FEET ASL  
19 MAY. 79 1015 HRS AST  
ASCEN. STOCK NO. 400

UPPER AIR DATA  
325002485  
WHITE SANDS  
TABLE 9 (cont)

GEODETIC COORDINATES  
32.40043 LAT. DEG  
106.37033 LON. DEG

GEODETIC ALTITUDE ASL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY G/CUBIC METER	SPEED OF WIND DATA KNOTS DIRECTION DEGREES(TN)	SPEED KIOTS	INDEX OF REFRACTION
25000.0	624.0	-24.3	35.6	38.5	579.9	614.4	231.6
24000.0	605.5	-25.5	35.5	39.0	570.1	613.2	230.4
24500.0	597.1	-26.5	35.9	39.4	560.7	611.9	228.0
25000.0	589.8	-27.6	36.1	35.3	551.5	610.5	226.8
25500.0	580.5	-28.7	36.4	34.2	542.4	609.4	225.6
26000.0	572.7	-29.8	36.6	33.6	533.5	607.7	224.8
26500.0	564.3	-30.6	36.5	24.5	523.9	606.7	228.2
27000.0	557.9	-31.4	36.7	22.7	514.3	605.8	229.0
27500.0	549.4	-32.1	36.9	23.9	505.0	604.9	229.3
28000.0	542.0	-32.8	36.1	19.2	495.6	603.9	229.8
28500.0	534.7	-33.6	37.0	18.5**	487.2	602.7	230.2
29000.0	527.3	-34.4	37.4	14.6**	478.9	601.2	230.8
29500.0	520.3	-35.4	37.7	14.1**	470.3	599.8	231.5
30000.0	513.4	-37.3	38.2	17.4**	462.9	598.5	232.1
30500.0	506.5	-35.5	38.5	3.7**	453.1	598.8	232.6
31000.0	299.9	-32.6	38.6	32.6	447.4	595.4	233.3
31500.0	293.2	-30.3	38.5	20.3	439.6	595.3	234.0
32000.0	286.7	-28.7	38.7	18.7	431.9	592.4	234.6
32500.0	280.2	-25.1	39.1	42.4	424.4	590.9	235.7
33000.0	274.9	-24.5	39.5	41.7	417.0	589.4	236.9
33500.0	267.8	-25.4	39.4	40.9	409.6	587.9	238.4
34000.0	261.6	-25.6	39.6	40.2	402.6	586.4	239.6
34500.0	255.0	-24.7	39.5	39.7	395.7	584.6	240.7
35000.0	250.2	-24.9	39.3	38.8	386.8	583.3	240.9
35500.0	244.5	-24.9	39.6	38.1	381.5	582.6	239.9
36000.0	238.9	-25.1	39.6	37.4	374.2	580.7	238.5
36500.0	233.2	-24.7	39.5	36.7	367.3	579.5	236.7
37000.0	227.5	-25.2	39.5	36.0	360.4	578.2	235.9
37500.0	222.6	-25.9	39.7	35.2	352.6	575.9	235.0
38000.0	217.4	-26.9	39.8	34.9	347.0	573.6	231.1
38500.0	212.3	-26.4	39.8	34.3	350.3	570.0	229.5
39000.0	207.4	-25.1	39.7	32.8	353.4	577.9	228.4
39500.0	202.5	-25.1	39.7	31.6	352.7	575.7	227.4
40000.0	197.9	-25.1	39.7	31.1	351.2	572.6	227.1
40500.0	193.3	-25.1	39.6	30.5	353.6	560.2	227.2
41000.0	188.8	-25.2	39.6	29.7	357.0	579.0	227.5
41500.0	184.3	-25.2	39.6	28.2	352.0	577.3	227.3
42000.0	179.0	-25.1	39.4	28.6	354.4	576.5	226.3
42500.0	175.9	-25.1	39.4	28.4	354.0	575.3	225.2
43000.0	171.7	-25.0	39.4	27.4	374.1	574.1	222.7

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 5939.00 FEET MSL  
19 NOV. 79 1015 HRS MST  
ASCENSION NO. 460

UPPER AIR DATA  
323320480  
WHITE STATION  
TABLE 9 (cont)

GEODETIC COORDINATES  
32°40'43" LAT DEG  
106°37'03" LON DEG

GEODETIC ALTITUDE MILLIBARS	PRESSURE MILLIBARS	TEMPERATURE ATM DEGREES	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SOUND ANOTS	WIND DATA DIRECTION DEGREES(CIN)	SPEED KNOTS	INDEX OF REFRACTION
43900.0	467.7	-55.9	572.3	219.9	47.8	1.000060		
44099.7	463.7	-57.9	571.6	217.7	46.2	1.000059		
44299.0	459.8	-58.5	570.8	215.5	44.8	1.000058		
44500.0	456.9	-59.4	570.4	213.9	43.6	1.000057		
45000.0	452.5	-60.4	569.6	212.2	42.6	1.000055		
46000.0	448.6	-60.1	568.9	210.7	41.6	1.000054		
46500.0	445.0	-60.1	567.3	210.5	40.9	1.000053		
47000.0	441.5	-62.4	565.9	210.3	40.3	1.000052		
47500.0	438.2	-63.2	564.5	211.3	39.5	1.000051		
48000.0	434.8	-64.2	563.1	214.1	38.0	1.000050		
48500.0	431.5	-64.8	562.4	215.1	38.1	1.000049		
49000.0	428.2	-65.1	561.9	216.6	35.3	1.000048		
49500.0	425.1	-65.5	561.4	218.3	33.7	1.000047		
50000.0	422.0	-65.7	561.1	219.3	32.4	1.000046		
50500.0	419.0	-65.9	561.0	219.6	32.0	1.000045		
51000.0	416.1	-65.3	560.9	219.9	32.2	1.000045		
51500.0	413.5	-65.9	560.8	220.0	34.9	1.000042		
52000.0	410.4	-65.0	560.7	220.0	37.6	1.000041		
52500.0	407.7	-65.7	560.8	221.4	39.2	1.000040		
53000.0	405.0	-65.3	561.6	222.9	40.6	1.000039		
53500.0	402.5	-64.6	562.1	224.7	40.2	1.000038		
54000.0	399.9	-64.5	562.3	227.0	38.2	1.000037		
54500.0	397.5	-64.5	562.6	229.2	35.7	1.000036		
55000.0	395.1	-64.5	562.8	230.3	31.8	1.000035		
55500.0	392.8	-64.4	562.9	231.7	27.8	1.000034		
56000.0	390.5	-64.3	563.0	232.2	25.5	1.000034		
56500.0	388.3	-64.2	563.1	232.5	23.7	1.000033		
57000.0	386.2	-64.2	563.2	232.7	22.4	1.000032		
57500.0	384.0	-64.1	563.3	232.7	22.2	1.000031		
58000.0	382.0	-64.0	563.4	232.7	22.0	1.000030		
58500.0	380.0	-63.9	563.5	231.2	21.1	1.000030		
59000.0	378.0	-64.2	563.4	229.4	20.2	1.000029		
59500.0	376.1	-63.9	562.0	227.1	19.1	1.000028		
60000.0	374.3	-64.1	562.5	225.7	17.9	1.000028		
60500.0	372.5	-62.8	563.0	220.4	16.7	1.000027		
61000.0	370.7	-61.5	563.7	217.6	16.1	1.000026		
61500.0	369.0	-61.3	567.0	215.3	15.6	1.000025		
62000.0	367.5	-61.9	567.9	213.7	15.3	1.000025		
62500.0	365.7	-62.5	566.2	213.0	15.0	1.000024		
63000.0	364.1	-63.0	565.5	213.5	14.7	1.000024		

STATION ALTITUDE 5959.00 FEET ASL  
12 NOV. 73 1015 HRS PST  
ASCENSION NO. 430

UPPER AIR DATA  
3230020460  
WHITE SAMPLES  
TABLE 9 (cont)

GEOGRAPHIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

GEOMETRIC ALTITUDE ASL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	AIR DE-POINT PERCENT	REL.HUM. PERCENT	REL.HUM. PERCENT	GEOCUPIC METER	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
53500.0	62.5	-53.6				103.9	216.8	14.1	1.000023
54500.0	61.0	-54.1				101.6	220.8	13.5	1.000023
55500.0	59.5	-54.7				99.4	225.6	12.8	1.000022
56500.0	58.1	-55.1				97.2	232.2	11.9	1.000022
57500.0	56.6	-54.5				94.5	239.7	11.2	1.000021
58500.0	55.3	-55.5				91.9	246.5	11.1	1.000020
59500.0	53.9	-52.5				89.5	252.5	11.2	1.000020
60500.0	52.6	-51.6				86.5	255.2	11.5	1.000019
61500.0	51.4	-51.0				84.5	254.0	11.2	1.000019
62500.0	50.1	-60.2				82.0	249.6	10.9	1.000018
63500.0	48.9	-60.9				79.9	242.9	10.5	1.000019
64500.0	47.7	-60.3				76.0	231.1	9.6	1.000017
65500.0	46.6	-59.7				73.1	218.3	9.7	1.000017
66500.0	45.5	-59.5				70.3	210.0	9.5	1.000017
67500.0	44.4	-59.5				67.5	209.0	8.8	1.000016
68500.0	43.3	-59.7				64.7	209.1	8.3	1.000016
69500.0	42.3	-59.7				62.0	209.2	8.0	1.000015
70500.0	41.3	-59.5				67.4	209.3	7.3	1.000015
71500.0	40.3	-59.5				55.7	222.5	9.1	1.000015
72500.0	39.3	-59.7				64.1	211.0	7.8	1.000014
73500.0	38.4	-59.6				62.6	195.6	6.9	1.000014
74500.0	37.5	-59.3				61.1	193.7	4.0	1.000014
75500.0	36.6	-59.3				59.6	191.1	1.9	1.000013
76500.0	35.7	-58.2				56.2	189.6	4.9	1.000013
77500.0	34.9	-58.2				53.8	188.4	1.0	1.000013
78500.0	34.0	-58.1				53.4	187.0	1.0	1.000012
79500.0	33.2	-58.2				54.0	187.1	1.0	1.000012

STATION ALTITUDE 3989.00 FEET MSL  
10 NOV. 79 1015 HRS MST  
ASCENSION ISL. 450

MANDATORY LEVELS  
323000Z050  
WHITE SAILS  
TABLE 10

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE DEGREES	AIR DESPOTENTIAL CENTIGRAGE	REL. HUM. PERCENT	WIND DATA	
					DIRECTION DEGREES (TIN)	SPEED KNOTS
850.0	4951.	13.6	-7.1	39.	9999.0	9999.0
690.0	5615.	9.8	1.2	56.	209.1	20.3
650.0	5365.	5.5	1.6	75.	218.8	24.1
750.0	10292.	1.6	-2.9	72.	222.7	23.5
650.0	12152.	*2	-21.8	17.	218.2	33.5
600.0	14242.	-4.0	-26.0	16.	213.2	37.5
550.0	16473.	-9.0	-26.2	19.	224.3	42.7
500.0	18665.	-15.0	-26.0	22.	216.8	42.4
450.0	21458.	-20.1	-36.1	22.	228.6	45.2
400.0	24287.	-26.1	-35.1	42.	229.4	41.0
350.0	27115.	-32.0	-45.0	21.	229.3	47.8
300.0	30035.	-37.6	-45.6	21.	253.3	54.2
250.0	34944.	-46.0	-50.0	240.9	53.6	
200.0	39676.	-51.6	-51.6	227.2	56.7	
175.0	42303.	-55.5	-55.5	224.8	52.7	
150.0	45592.	-59.7	-59.7	211.3	42.0	
125.0	49371.	-65.0	-65.0	218.2	35.7	
100.0	53322.	-64.0	-64.0	226.8	38.3	
80.0	56301.	-63.0	-63.0	231.3	21.2	
70.0	60259.	-61.0	-61.0	217.0	16.0	
60.0	64108.	-64.5	-64.5	223.4	13.2	
50.0	57790.	-60.1	-60.1	249.5	10.9	
40.0	72353.	-59.5	-59.5	229.2	8.8	

\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3597.30 FEET MSL  
19 NOV. 79 1145 HRS MST  
ASCENSION NO. 377

SIGNIFICANT LEVEL DATA  
3230069377  
5 H R

TABLE 11

GEODETIC COORDINATES  
32°48.034 LAT DEG  
106°42.307 LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE HSL FEET	TEMPERATURE AIR DEGREE CENTIGRADE	REL.HUM. PERCENT	
			DEGREE	GRADE
677.5	3997.3	20.7	5.1	36.0
550.0	4065.9	16.9	3.6	44.0
776.2	7349.4	6.5	1.9	53.0
700.0	10156.5	3	-1.3	96.0
668.2	11452.1	-2.4	-4.4	65.0
639.8	12509.6	-4.9	-6.4	91.0
631.2	12659.9	-6.7	-9.4	71.0
622.4	13224.2	-3.2	-25.4	16.0
605.4	13763.9	-3.4	-24.9	17.9
531.4	17286.8	-10.7	-28.4	22.0
500.0	16815.9	-14.9	-28.2	31.0
488.6	19590.6	-16.1	-35.3	21.0
411.6	23562.6	-25.5	-37.4	31.0
400.0	24244.3	-26.3	-35.1	43.0
377.6	25608.5	-28.9	-40.9	30.0
345.0	27716.2	-33.1	-47.4	22.0
332.4	28575.0	-34.4	-49.4	20.9
326.2	29432.6	-36.7		
300.0	30603.5	-39.5		
262.2	33902.4	-45.6		
250.2	34939.3	-49.3		
236.2	36174.4	-52.7		
200.0	39609.7	-53.4		
193.1	40435.6	-52.7		
150.3	45703.3	-61.5		
134.5	47922.5	-63.6		
127.4	49025.5	-64.5		
104.6	53025.4	-64.9		
100.0	55934.9	-62.9		
725.0	56345.6	-64.5		
68.6	56377.5	-54.9		
62.4	57671.0	-62.1		
76.6	59353.7	-54.0		
79.0	61164.3	-62.1		
57.3	65353.6	-64.6		
50.0	68025.6	-60.2		
46.4	69550.9	-61.2		
34.0	75331.6	-59.6		
30.0	78593.6	-55.8		
24.9	82307.7	-55.0		

STATION ALTITUDE 3997.30 FEET MSL  
19 NOV. 79 1145 HRS MST  
ASCE, 510h, NO. 377

UPPER AIR DATA  
3230060377  
5 M R  
TABLE 12

GEODETIC COORDINATES  
32.48034 LAT DEG  
106.42307 LON DEG

GEODETIC ALTITUDE SL FELT	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	DEPOINT CENTIGRADE	REL.HUM. PERCENT	GR/CUBIC METER	SOUND KNOTS	SPEED OF WIND DATA METERS (IN) DIRECTION DEGREES (IN)	SPEED KNOTS	WIND DATA INDEX OF REFRACTION
3997.3	877.5	20.7	5.1	36.0	1036.1	669.1	210.0	12.0	1.000269
4000.0	877.2	20.7	5.1	36.0	1036.1	669.1	210.0	12.0	1.000269
4000.0	861.8	18.0	4.4	40.6	1027.2	660.0	212.4	12.7	1.000266
5000.0	846.5	15.7	3.7	44.9	1017.4	665.3	214.6	13.4	1.000263
5000.0	831.3	14.2	3.5	46.7	1004.3	661.5	216.6	14.1	1.000260
6000.0	815.5	12.7	3.2	52.5	991.5	659.8	218.4	14.8	1.000257
6000.0	801.7	11.2	2.8	56.2	979.8	658.1	220.0	15.5	1.000253
7000.0	787.2	9.7	2.3	60.0	960.3	656.3	221.6	16.1	1.000250
7500.0	773.0	8.2	1.9	64.5	953.9	654.5	223.1	16.6	1.000246
8000.0	758.7	6.7	1.7	70.3	941.2	652.8	224.2	16.9	1.000243
8000.0	744.7	5.2	1.4	76.2	926.8	651.1	224.4	16.9	1.000240
9000.0	730.9	3.7	1.0	82.2	916.0	649.4	224.7	17.0	1.000237
9500.0	717.4	2.2	0.5	83.2	906.5	647.6	225.9	17.9	1.000233
10000.0	704.1	0.8	0.1	94.1	892.0	645.8	227.1	18.8	1.000230
10000.0	691.0	-0.4	-1.3	93.9	875.8	644.4	228.0	20.6	1.000224
11000.0	677.9	-1.4	-2.7	90.8	856.8	643.1	229.6	23.1	1.000219
11500.0	665.1	-2.5	-4.2	88.1	853.9	641.7	227.7	25.5	1.000213
12000.0	652.5	-3.7	-5.1	89.5	844.5	640.3	225.7	28.0	1.000209
12000.0	640.9	-4.9	-6.1	91.0	829.2	638.8	223.7	31.0	1.000205
12000.0	627.6	-6.1	-12.0	49.6	811.8	639.4	221.1	36.4	1.000193
13000.0	615.8	-5.3	-25.2	16.4	794.6	640.1	219.3	41.3	1.000181
14000.0	604.1	-3.5	-21.9	17.1	780.1	639.9	218.2	45.0	1.000178
14000.0	592.4	-4.6	-25.4	17.8	768.1	638.6	217.3	45.9	1.000175
15000.0	581.9	-5.7	-25.8	18.6	755.4	637.3	216.6	45.3	1.000172
15000.0	569.7	-6.8	-26.5	19.3	751.8	636.0	216.7	44.1	1.000170
16000.0	558.7	-7.9	-26.8	20.1	733.5	634.6	216.4	43.9	1.000167
16500.0	547.9	-9.0	-27.3	20.8	722.3	633.3	215.7	44.7	1.000164
17000.0	537.4	-10.1	-27.9	21.6	711.3	632.0	213.7	46.1	1.000162
17500.0	526.9	-11.2	-28.4	23.3	700.6	630.6	212.7	47.5	1.000159
18000.0	516.3	-12.7	-26.0	26.2	690.4	628.9	211.4	47.9	1.000157
18500.0	506.3	-14.0	-28.1	26.2	680.4	627.2	211.1	48.2	1.000155
19000.0	496.5	-15.2	-29.3	28.6	669.9	625.8	213.2	47.6	1.000152
19500.0	486.4	-16.0	-32.6	22.2	658.6	624.9	215.5	47.0	1.000149
20000.0	476.5	-17.0	-33.6	22.0	648.0	623.5	217.6	46.6	1.000146
20500.0	466.8	-18.2	-34.0	23.3	637.7	622.1	219.6	46.2	1.000144
21000.0	457.3	-19.4	-34.5	24.5	627.6	619.7	221.6	46.3	1.000142
21500.0	448.0	-20.5	-35.0	25.8	617.6	617.9	223.5	46.7	1.000139
22000.0	438.9	-21.7	-35.6	27.1	607.9	616.4	225.5	47.5	1.000135
22500.0	430.0	-22.8	-36.1	28.3	596.3	615.0	227.6	49.3	1.000133
23000.0	421.2	-24.0	-36.7	29.6	580.8	615.0	229.6	51.1	

STATION ALTITUDE 3997.30 FEET MSL  
19 NOV. 79 1145 HRS MST  
ASCENSION NO. 377

UPPER AIR DATA  
5230060377  
S A R  
TABLE 12 (cont)

GEODETIC COORDINATES  
32.48034 LAT DEG  
106.42307 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPNT CENTIGRADE	PERCENT REL.HUM.	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(UTN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
23530.0	412.7	-25.2	-37.3	30.8	579.5	613.6	230.5	52.4	1.000131
24000.0	404.1	-25.9	-35.8	36.7	569.3	612.6	231.2	53.7	1.000129
24530.0	395.7	-26.8	-36.1	40.6	559.4	611.6	231.6	54.4	1.000126
25030.0	387.4	-27.7	-38.2	35.8	549.9	610.4	231.7	54.7	1.000124
25530.0	379.3	-28.7	-40.4	31.0	539.5	609.2	232.1	54.9	1.000122
26030.0	371.3	-29.7	-42.1	28.5	521.2	507.9	232.0	55.0	1.000119
26530.0	363.5	-30.7	-43.5	26.6	522.1	606.7	233.5	55.1	1.000117
27030.0	355.7	-31.7	-45.1	24.7	513.2	605.4	234.5	55.1	1.000115
27530.0	348.2	-32.7	-46.7	22.6	504.4	604.2	234.6	56.1	1.000113
28030.0	340.8	-33.5	-48.1	21.3	495.4	603.1	234.5	57.1	1.000111
28530.0	333.5	-34.3	-49.2	20.2	486.3	602.1	233.5	58.4	1.000109
29030.0	326.3	-35.5	-50.0	16.1*	478.4	600.5	232.7	59.5	1.000107
29530.0	319.2	-36.3			470.6	598.9	232.2	60.3	1.000105
30030.0	312.3	-37.6			462.2	597.7	232.5	61.7	1.000103
30530.0	305.5	-36.7			453.9	596.5	233.1	63.5	1.000101
31030.0	298.8	-39.7			445.6	595.2	234.4	65.5	1.000099
31530.0	292.1	-40.7			437.9	543.9	235.7	67.6	1.000098
32030.0	285.6	-41.8			430.1	542.6	237.1	69.2	1.000096
32530.0	279.3	-42.9			422.4	531.2	238.4	70.7	1.000094
33030.0	273.1	-43.9			414.9	569.9	239.6	72.2	1.000092
33530.0	267.0	-45.0			407.6	568.5	239.5	73.6	1.000091
34030.0	261.0	-46.1			400.5	537.0	239.5	73.3	1.000089
34530.0	255.4	-47.3			394.4	564.8	239.5	73.1	1.000088
35030.0	249.5	-49.5			386.2	582.7	239.3	71.3	1.000086
35530.0	243.5	-50.6			351.6	560.9	238.6	69.2	1.000085
36030.0	237.9	-52.2			375.2	579.1	238.0	67.0	1.000084
36530.0	232.6	-52.8			367.4	578.3	236.7	64.7	1.000082
37030.0	227.9	-52.9			359.0	576.2	235.8	62.5	1.000080
37530.0	223.1	-53.0			350.8	578.1	234.5	60.3	1.000078
38030.0	218.6	-53.1			375.2	576.0	233.7	58.3	1.000076
38530.0	214.5	-53.2			335.0	517.8	233.4	56.3	1.000075
39030.0	209.5	-53.3			327.3	577.7	233.2	54.8	1.000073
39530.0	204.6	-53.4			319.5	577.6	233.0	53.6	1.000071
40030.0	197.1	-55.1			312.0	577.9	232.6	53.0	1.000069
40530.0	192.5	-52.6			304.4	575.3	232.2	52.8	1.000068
41030.0	187.9	-53.6			225.3	577.2	231.6	52.8	1.000066
41530.0	183.5	-54.5			222.3	576.1	231.3	53.1	1.000065
42030.0	179.1	-55.3			235.5	575.6	230.9	53.2	1.000064
42530.0	175.1	-56.1			230.3	575.9	230.5	52.6	1.000063
43030.0	170.8	-57.0			225.2	572.6	230.1	52.0	1.000061

\* \* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3497.30 FEET A.S.L.  
19 NOV. 74 1145 HRS MST  
ASCENSION NO. 377

UPPER AIR DATA  
3230000377  
S H R

TABLE 12 (cont)

GEOPHYSIC ALTITUDE IN FEET	PRESSURE IN MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY PERCENT	WIND DATA SOUND KNOTS DEGREES (TN)	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
43369.3	165.7	-57.8	269.7	571.7	229.7	50.7	1.000060	
43069.3	162.6	-58.7	264.4	570.6	229.2	49.3	1.000059	
42570.6	158.9	-59.5	259.1	569.5	226.7	49.5	1.000058	
42530.6	155.1	-60.5	254.0	568.3	228.2	50.2	1.000057	
42560.6	151.5	-61.2	263.9	567.2	227.6	51.7	1.000055	
36669.9	147.8	-61.8	253.6	566.4	227.5	54.1	1.000054	
36662.6	144.2	-62.5	238.3	565.8	227.2	56.5	1.000053	
37166.3	140.7	-62.7	235.0	565.1	226.7	56.1	1.000052	
47769.0	137.3	-63.2	227.9	564.5	226.2	55.7	1.000051	
42669.0	135.6	-63.6	226.6	564.1	225.6	53.9	1.000050	
43565.6	136.7	-62.5	215.2	565.4	224.6	50.5	1.000048	
49629.0	127.6	-61.5	217.0	566.7	223.5	47.3	1.000047	
49500.0	124.5	-61.3	205.2	565.2	222.1	44.3	1.000046	
36660.0	121.4	-60.3	203.6	565.7	220.7	41.7	1.000045	
36566.0	118.5	-62.8	196.2	565.1	219.2	39.4	1.000044	
51156.0	125.6	-63.2	131.8	564.5	216.2	38.6	1.000043	
34369.0	122.3	-63.6	167.5	565.9	217.4	36.2	1.000042	
32230.0	119.0	-60.6	185.3	565.4	218.0	36.9	1.000041	
32250.0	107.2	-64.5	179.2	562.8	216.9	39.7	1.000040	
32260.0	104.7	-66.9	175.2	562.2	220.9	38.1	1.000039	
32310.0	102.2	-63.6	173.1	563.6	223.4	36.3	1.000038	
32360.0	99.7	-62.7	165.6	565.2	226.2	34.5	1.000037	
32390.0	97.3	-61.7	160.2	566.5	229.4	32.9	1.000036	
32365.0	94.9	-52.0	155.8	562.7	231.9	33.0	1.000035	
32360.0	92.6	-52.6	153.4	564.9	234.3	33.5	1.000034	
32360.0	90.0	-53.5	150.4	564.1	236.5	33.6	1.000033	
32390.0	87.3	-51.7	149.7	563.6	238.6	32.9	1.000033	
32365.0	85.0	-52.0	142.7	564.5	240.8	32.2	1.000032	
32360.0	82.6	-52.6	136.8	565.3	249.7	29.4	1.000031	
32360.0	80.2	-53.5	125.3	565.7	240.4	26.4	1.000030	
32365.0	78.0	-52.6	132.4	564.9	248.6	23.1	1.000029	
32360.0	75.6	-53.6	129.5	564.0	234.5	19.6	1.000029	
32360.0	73.2	-52.2	126.6	563.6	229.4	16.4	1.000028	
32360.0	70.9	-52.5	123.2	564.3	225.3	14.3	1.000027	
32360.0	68.6	-52.6	119.9	565.0	220.2	12.2	1.000027	
32360.0	66.3	-52.5	115.7	565.7	219.6	12.1	1.000026	
32360.0	64.0	-52.6	113.8	565.7	221.3	12.6	1.000025	
32360.0	61.7	-52.5	114.2	565.3	223.1	13.5	1.000025	
32360.0	59.4	-52.6	109.7	564.9	225.0	15.0	1.000024	
32360.0	57.0	-52.5	115.0	564.5	226.0	16.6	1.000024	

STATION ALTITUDE 3997.50 FEET MSL  
13 NOV. 73 1145 HRS AST  
ASCENSION NO. 377

UPPER AIR DATA  
323863377  
S A R  
TABLE 12 (cont)

GEODETIC COORDINATES  
32°48'34" LAT. DEG  
136°42'30" LON. DEG

GEODETIC ALTITUDE METERS	PRESSURE MILLIBARS	TEMPERATURE CENTIGRADE	ALTIMETER DEGREES CENTIGRADE	REL. HUM. PERCENT	GEOCUBIC SOUND METER	SPEED OF WIND, KNOTS	DIRECTION DEGREES (IN) WEST	WIND DATA KNOTS	INDEX OF REFRACTION
62632.0	62.5	-67.8	-67.8	100	163.8	554.1	228.0	17.1	1.000023
64080.7	60.5	-65.9	-65.9	101.4	560.7	229.4	17.5	1.000023	
64300.2	59.4	-64.1	-64.1	102.3	565.3	231.2	17.4	1.000022	
65600.5	58.0	-63.8	-63.8	103.0	562.9	233.9	16.5	1.000022	
65536.8	55.5	-63.8	-63.8	103.4	562.9	236.9	15.6	1.000021	
66036.2	55.2	-63.5	-63.5	104.1	564.3	238.5	13.3	1.000020	
66532.0	53.9	-62.7	-62.7	105.2	565.1	240.5	10.9	1.000020	
67038.1	52.6	-62.9	-62.9	106.7	566.2	240.9	6.7	1.000019	
67638.1	51.3	-62.4	-62.4	107.3	567.3	234.7	7.0	1.000019	
68236.3	50.4	-61.6	-61.6	108.9	569.4	224.5	5.4	1.000018	
68733.5	49.3	-60.9	-60.9	109.6	569.1	215.5	5.2	1.000018	
69230.5	47.7	-60.0	-60.0	110.2	567.7	209.8	5.7	1.000017	
69829.0	46.5	-60.4	-60.4	110.5	567.3	205.3	6.2	1.000017	
70326.0	45.4	-60.1	-60.1	111.3	567.4	209.6	6.6	1.000017	
70824.6	44.3	-59.9	-59.9	112.6	567.6	213.4	7.0	1.000016	
71422.9	43.5	-60.6	-60.6	113.9	567.9	217.0	7.5	1.000016	
71921.2	42.2	-63.7	-63.7	114.2	568.2	229.5	8.1	1.000015	
72419.3	41.2	-63.2	-63.2	115.5	568.5	223.6	8.8	1.000015	
72918.0	40.2	-66.5	-66.5	116.8	568.7	225.3	9.3	1.000015	
73416.8	39.3	-69.3	-69.3	117.4	569.0	226.5	9.7	1.000014	
73916.3	38.3	-70.5	-70.5	118.5	569.3	227.5	10.1	1.000014	
74415.3	37.4	-70.9	-70.9	119.0	570.0	227.9	9.9	1.000014	
74914.6	36.5	-70.2	-70.2	119.6	570.6	228.3	9.6	1.000013	
75413.9	35.7	-69.0	-69.0	120.2	570.1	223.6	9.3	1.000013	
75913.3	35.0	-68.6	-68.6	120.8	570.4	225.8	9.6	1.000013	
76412.6	34.3	-68.0	-68.0	121.4	570.7	246.0	7.9	1.000012	
76911.9	33.6	-67.2	-67.2	122.1	571.4	247.0	7.4	1.000012	
77411.3	32.9	-66.4	-66.4	122.8	572.1	225.4	7.5	1.000012	
77910.6	32.3	-65.6	-65.6	123.5	572.8	232.7	7.6	1.000011	
78410.0	31.7	-64.8	-64.8	124.1	573.5	241.3	7.6	1.000011	
78909.3	31.1	-64.0	-64.0	124.7	574.2	247.4	7.3	1.000011	
79408.6	30.5	-63.2	-63.2	125.4	574.9	238.6	7.0	1.000011	
79908.0	29.9	-62.4	-62.4	126.0	574.6	253.0	6.6	1.000010	
80407.3	28.4	-61.6	-61.6	126.7	574.7	254.4	6.0	1.000010	
80906.6	27.9	-60.8	-60.8	127.4	575.4	239.2	5.5	1.000010	
81406.0	26.5	-60.0	-60.0	128.1	575.4	240.8	5.9	1.000009	
81905.3	25.0	-59.2	-59.2	128.8	575.4	229.8	5.8	1.000009	
82404.6	23.6	-58.4	-58.4	129.5	575.3	237.5	5.2	1.000009	
82903.9	22.1	-57.6	-57.6	130.2	575.3	240.6	5.0	1.000009	
83403.2	20.7	-56.8	-56.8	130.9	575.3	238.9	4.9	1.000009	

STATION ALTITUDE: 3997.33 FEET MSL  
 19 NOV. 72 1145 HRS CST  
 ASCENSION NO. 377

MANDATORY LEVELS  
 3230550377  
 S M R  
 TABLE 13

GEODETIC COORDINATES  
 32°48'03" LAT DEG  
 106°42'30" LON DEG

PRESSURE ELEVATION MILLIBARS	FEET	TEMPERATURE DEGREES	REL. HUM. PERCENT	WIND DATA	
				AIR DEGREES	DEGREE DIRECTION DEGREES (TH) KNOTS
455.0	4233.	16.0	54.	214.1	15.2
890.0	5559.	11.0	57.	220.2	15.5
759.0	6211.	5.3	74.	224.3	16.2
782.0	19285.	-5.5	75.	227.4	19.3
625.0	12957.	-5.2	95.	225.4	26.4
602.0	14569.	-5.3	99.	217.3	46.2
556.0	16392.	-3.5	17.	215.9	44.5
369.0	42749.	-14.9	21.	212.3	47.3
456.0	21373.	-26.5	31.	223.1	46.5
499.0	42234.	-26.5	26.	231.6	54.3
356.0	27353.	-162.4	45.	234.6	55.3
356.0	38648.	-139.5	45.	234.1	65.1
253.0	34684.	-149.5	45.	239.3	71.7
285.0	39375.	-155.5	45.	232.9	53.2
175.0	42466.	-156.1	45.	239.5	52.6
159.0	45362.	-61.5	227.7	52.6	
125.0	45273.	-61.6	222.4	44.9	
106.0	55752.	-62.0	225.7	34.9	
106.0	39251.	-62.9	239.9	23.5	
73.0	33975.	-62.1	229.3	12.3	
69.0	64056.	-64.0	239.2	17.7	
56.0	67724.	-60.2	224.7	5.4	
42.0	72326.	-60.0	225.5	9.3	
39.0	76265.	-55.3	256.9	7.3	
29.0	62669.	-55.1			